



## PREVENTION OPPORTUNITIES UNDER THE BIG SKY

### CHILDHOOD VACCINATION: BENEFITS ARE GREAT, RISKS ARE RARE

Vaccinating children to prevent communicable diseases is one of the greatest life-saving steps ever taken. In the United States by 2005 the number of cases of diphtheria, mumps, pertussis and tetanus had decreased 92% to 99% from the prevaccine years for each of these vaccine-preventable diseases<sup>1</sup>. Transmission in the United States of poliovirus, measles virus and rubella virus has been eliminated, and smallpox transmission has been eradicated from the earth. The direct and indirect cost savings related to NOT dealing with the morbidity and mortality of these diseases in recent decades is enormous, even though seldom recognized. In addition, deaths from hepatitis A, hepatitis B, *Haemophilus influenzae* type B, and varicella had declined more than 80% in the United States from 1980 to 2005.

Risks for adverse events for each vaccine have been documented; mild risks are uncommon, severe risks very rare.<sup>2</sup> Concerns about other risks for which no evidence exists sometimes gain notoriety that stimulates unfounded hesitancy to have children vaccinated. Physicians have opportunities to counsel parents about both documented risks and unfounded concerns. This issue of *Montana Public Health* describes some of these risks and concerns.

**Childhood Vaccination in Montana** Fifty years ago (1958) in Montana, 16 cases of diphtheria (on average, a case a month), 68 cases of polio (a case a week), and 169 cases of “whooping cough” (a case every other day) were reported; 8500 cases of measles (on average, 23 cases a day) were reported in Montana in 1962. In contrast, since 1990 no case of polio, measles or congenital rubella syndrome has been reported. High levels of childhood vaccination are responsible for this dramatic change. But, there is no room for complacency. Measles continues to occur elsewhere and may be imported to Montana. From 1993 to 2004 the number of reported cases of pertussis, “whooping cough”, averaged 25 per year (range 2 to 84 cases). However in 2005, 585 cases were reported—a stark reminder of the need to keep adult as well as childhood vaccinations current.

**The National Immunization Survey** measures vaccination levels for children aged 19 to 35 months.<sup>3</sup> Table 1 shows the most current estimates for Montana.

**TABLE 1: Childhood vaccination, MT and US, July 06–June 07**

Vaccine	Percent Vaccinated	
	MT	U.S.
Diphtheria, Tetanus, acellular Pertussis (4 doses)	78	85
Polio (3 doses)	89	93
Measles, Mumps, Rubella (1dose)	91	92
Hepatitis B (3 doses)	92	93
Varicella (1dose)	82	90
Vaccine Series Complete*	68	78

\*Complete series: 4 DTaP, 3 Polio, 1 MMR, 3 Hib, 3 Hep B, 1 Varicella

**Vaccine Safety Monitoring** Vaccine safety is monitored by federal agencies (notably FDA and CDC) and by companies that manufacture vaccines.

Post licensure monitoring through the Vaccine Adverse Events Reporting System is an essential part of ensuring vaccine safety. Physicians and other health care providers are encouraged to report events that may be vaccine-related through this system.<sup>4</sup> In this way, rare adverse events associated with vaccination may be detected after widespread vaccine use in the population. Table 2 provides examples of mild and severe adverse events that have been documented to be associated with vaccination.

**TABLE 2: Examples of adverse events related to vaccination**

Adverse Event	Vaccine	Frequency
Mild		
▪ redness or swelling	DTaP	1 in 4
▪ mild rash	MMR	1 in 20
▪ fever > 101°F	Hib	1 in 20
Severe		
▪ Seizure	DTaP	< 1 in a million
▪ Deafness	MMR	< 1 in a million
▪ Severe allergic reaction	Hib	Very rare

In 1986, the U.S. Congress established the National Vaccine Injury Compensation Program.<sup>5</sup> This program provides recourse for individuals who believe they have been injured by a recommended vaccination.

**Concerns, but No Evidence** A small but growing proportion of parents in the U.S. is sufficiently concerned about adverse events from childhood vaccination that they choose not to have their children vaccinated.<sup>6</sup> At least some of this concern is based on beliefs about risks for which there is no scientific evidence. A current example of one these unfounded beliefs involves the proposed relationship between exposure to vaccine (either some component of vaccine or the number of vaccines administered) and the onset of autism (or related conditions in the autism spectrum disorders). Despite the fact that numerous investigations in the U.S. and elsewhere in the world have sought evidence for this proposed relationship but found none, the belief persists. [In all likelihood the belief will persist until the actual cause of autism is identified.]

Recently, the National Vaccine Injury Compensation Program awarded compensation to the family of a child with a rare metabolic disorder who developed autism-like symptoms after receiving childhood vaccinations.

Although government officials involved with this case are not allowed to disclose details, some media reports have suggested that there is now evidence that vaccines cause autism. This is a misrepresentation. Both the CDC and HRSA (the government agency that administers the National Vaccine Injury Compensation Program) have stated unequivocally that they have:<sup>7</sup>

**“reviewed the scientific information concerning the allegation that vaccines cause autism and has found no credible evidence to support the claim.”** and

**“HRSA has maintained and continues to maintain the position that vaccines do not cause autism and has never concluded in any case that autism was caused by vaccination.”**

**Childhood vaccination rates need to be increased** Physicians and other health care professionals in Montana should encourage childhood vaccination and counsel parents with unfounded concerns. Physician counseling makes a big difference.<sup>8</sup>

#### **Recommendations for health care providers regarding childhood vaccination**

- Encourage parents to have their children vaccinated
- Provide age-appropriate vaccinations (<http://www.cdc.gov/vaccines/recs/schedules/default.htm>)
- Report adverse events that may be related to vaccination to VAERS (<http://secure.vaers.org/VaersDataentryintro.htm>)

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